NATIONAL WEATHER SERVICE

ALBUQUERQUE, NEW MEXICO

New Mexico

Skywatcher

VOLUME 2, ISSUE 1 APRIL 2006

UPCOMING COOPERATIVE OBSERVER AWARDS:

- **April 2006**
  Allen Brown
  Progresso, NM
  15 Years of Service
- **April 2006**
  Ernest Sutliff
  Eagle Nest, NM
  10 Years of Service
- **April 2006**
  Aztec Ruins Natl Mon
  Aztec, NM
  75 Years of Service
- **May 2006**
  John Jekielek
  5 SE of McGaffey, NM
  50 Years of Service
- **May 2006**
  BIA - Jicarilla
  Dulce, NM
  100 Years of Service
- **May 2006**
  Mr. & Mrs. Connelly
  Elida, NM
  20 Years of Service
- **June 2006**
  Betty Dunlap
  Fort Sumner, NM
  30 Years of Service

INSIDE THIS ISSUE:

1st Anniversary Edition

One year ago, the National Weather Service in Albuquerque launched the New Mexico Skywatcher. In addition, we dedicated a week during the early spring as Weather Data Awareness Week. This newsletter was designed to keep our observers in the loop on the latest advances in the weather community and to show how your information is used throughout the nation. Not only does your valuable data help to determine climate change across the region, it also assists the NWS monitor winter snow melt-off and determine the severity of droughts. In addition, your real time severe weather reports help save lives and valuable property, especially during winter storms, strong winds, large hail events, flash floods, and even tornadoes.

This first anniversary issue of the New Mexico Skywatcher features important information for our observers. The articles will demonstrate how your timely data and information is valuable to researchers, businesses, and the public throughout the world. We also note interesting weather facts during the past winter season across the region.

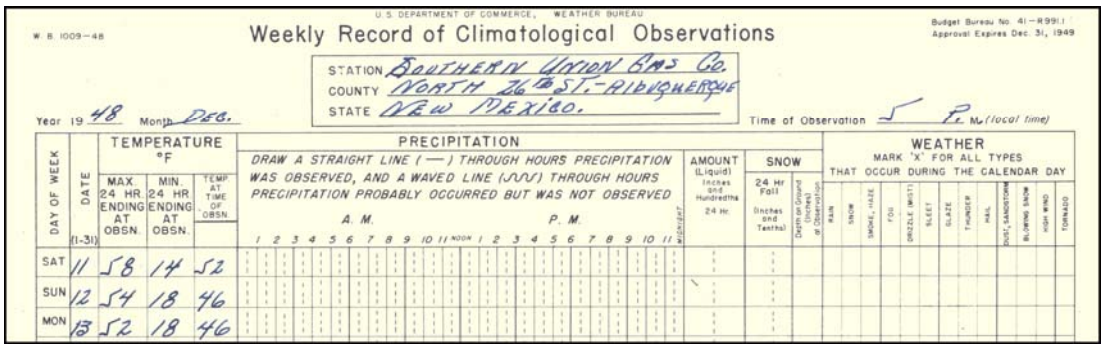
Congratulations to those receiving awards this spring and summer (shown in the left column). Your weather observations are vital in developing climatological databases and supporting weather forecasting.

We wish you the best during the spring and summer seasons!

Author: Daniel Porter

Historical Albuquerque Valley Data

Weather observations from the Cooperative Observer Program (COOP) are important as this information is used for developing climate databases, forecast verification, and distribution to the public. Reliable weather records in Albuquerque date back to 1893, with records at the Albuquerque International Airport (5,300 feet) first beginning in 1939, where official records continue to be kept. However, due to the vast difference in temperature and precipitation throughout the city, additional climate records were needed, especially along the valley floor. Thus, in 1948, the Albuquerque Valley COOP station was established (initially as an unofficial and unpublished site). The first observers were the employees at the Southern Union Gas Company (Nov 1948 to Aug 1969) and at the Swendson's Dairy Farm (Sep 1969 to Sep 1980). In late Oct 1980, the station was moved to the residence of Robert DeBlasie, (cont. on page 7)



U.S. DEPARTMENT OF COMMERCE, WEATHER BUREAU — W. B. 1009-48 — Budget Bureau No. 41-R991.1, Approval Expires Dec. 31, 1949

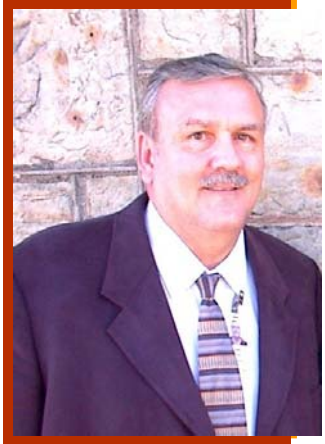
Weekly Record of Climatological Observations

STATION Southern Union Gas Co.
COUNTY North 7th St.-Albuquerque
STATE New Mexico.

Year 19 48 Month Dec. Time of Observation 5 P.M. (local time)

DAY OF WEEK	DATE (1-31)	TEMPERATURE °F: MAX. 24 HR. ENDING AT OBSN.	TEMPERATURE °F: MIN. 24 HR. ENDING AT OBSN.	TEMPERATURE °F: TEMP. AT TIME OF OBSN.	PRECIPITATION: DRAW A STRAIGHT LINE (—) THROUGH HOURS PRECIPITATION WAS OBSERVED, AND A WAVED LINE (∿∿∿) THROUGH HOURS PRECIPITATION PROBABLY OCCURRED BUT WAS NOT OBSERVED (A.M. 1 2 3 4 5 6 7 8 9 10 11 NOON; P.M. 1 2 3 4 5 6 7 8 9 10 11 MIDNIGHT)	AMOUNT (Liquid) Inches and Hundredths 24 Hr.	SNOW 24 Hr Fall Inches and Tenths	Depth on Ground (Inches) at Observation	WEATHER — MARK 'X' FOR ALL TYPES THAT OCCUR DURING THE CALENDAR DAY: RAIN	SNOW	SMOKE, HAZE	FOG	DRIZZLE (NOT)	SLEET	GLAZE	THUNDER	HAIL	DUST, SANDSTORM	BLOWING SNOW	HIGH WIND	TORNADO
SAT	11	58	14	52																			
SUN	12	54	18	46																			
MON	13	52	18	46																			

Joe's Place



Joe Alfieri
Observing Program Leader

Welcome to the first anniversary edition of the New Mexico Skywatcher! We hope you are having a wonderful new year and we thank each and every one of you for the excellent service throughout the past year. In this section, I will highlight a few reminders for the upcoming summer season.

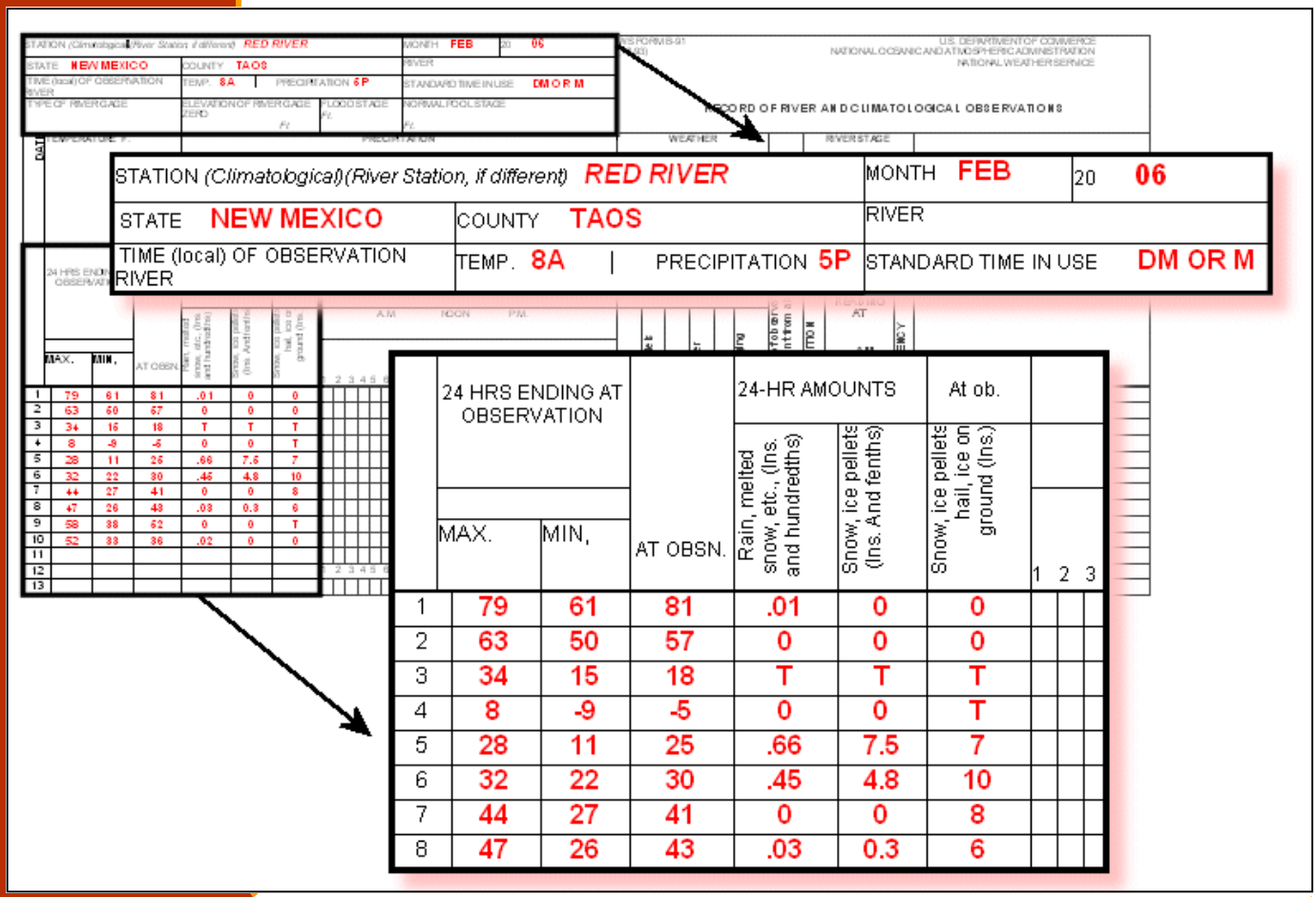
If you have a standard 8-inch rain gauge, it is time to place the inner measuring tube and funnel inside the gauge. This will make measuring summer precipitation easier and keep moisture from evaporating.

Contact our office at 1-888-386-7637 if you should need supplies, such as a replacement rain gauge stick, additional forms, or envelopes.

Below is an example of a B91 form. Please ensure that when filling out the form, you complete the station, month, year, state, and county information. In addition, enter the observation times of the temperature and/or precipitation readings, and record the Mountain (M) or Daylight Mountain (DM) indicator. Fill out the river information only if you take these observations.

When entering the data, please ensure you complete all three precipitation columns, even if it was a precipitation-free day. Entering zeros in these columns (when necessary) will save significant time and allow our office to send in your observations to the National Climatic Data Center (NCDC) in a timely fashion. As a reminder, liquid precipitation is rounded to the nearest hundredth of an inch (e.g. 0.66), snowfall is rounded to the nearest tenth (e.g. 7.5), and snow depth is recorded in whole inches (e.g. 7). If you miss an observation, don't panic, just leave those boxes blank.

Thanks to those who send in their forms on time. This helps our staff meet the mailing deadline to NCDC, which is the 15th of every month. The data you report is recorded and made available to the public. Your accurate reports are the backbone of our nation's climatological history.



Drought, La Niña, and New Mexico Precipitation

By now, most New Mexicans have heard La Niña is exerting an influence on the state. La Niña is the opposite "phase" of the El Niño-Southern Oscillation (ENSO) cycle, and precipitation patterns in the western United States tend to be the opposite of those observed during El Niño conditions. La Niña tends to bring dry weather to the states of Arizona and New Mexico, especially during the cooler half of the year. Very rapid cooling of the sea surface temperatures were observed in the Equatorial Pacific region last October (2005). Even though ENSO numerical models were suggesting a La Niña was in the making as early as the summer of 2005, it wasn't certain until the rapid cooling took place last October. At that point, confidence in winter forecasts of drier than normal weather was boosted. While no one could have foreseen just how exceptionally dry the winter would be, the rapidity of the sea surface cooling may have played a part.

September 18, 2005: Photo by Linda Rawson
Pyrocumulus cloud visible atop the Pine Canyon Complex smoke plume located near El Rito, NM

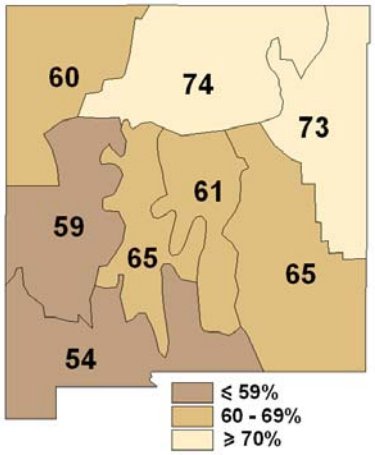
The November 2005 through February 2006 (four month) period was the second driest such period in our New Mexico record books, dating back to the middle 1890s. For the southern half of New Mexico, it was the driest such period, eclipsing the dismal November 1903 through February 1904 period. The table below depicts some of the locations where "dry" records were set during the November-February timeframe. This exceptionally dry winter caused drought conditions to worsen throughout the state of New Mexico. Presently, the drought situation is a rather complicated combination of short-term (approximately four months) and long-term (generally 48 to 72 months) drought. The short-term drought extends virtually statewide, while the long-term drought includes the far western section of New Mexico from Grants to Gallup and Zuni, the mountains from near Las Vegas to Santa Fe, Jemez Springs, Los Alamos and Chama, and also the mountains from around Ruidoso to Capitan. The long-term drought is mainly due to significant five and six year precipitation deficits across this region. (continued on Page 4)

Location	Nov 2005– Mar 2006 Precip	Previous Record Low Amount	Year of Previous Record
Albuquerque	0.28 inches	0.30 inches	1903-1904
Capitan	0.59 inches	1.94 inches	1980-1981
Cimarron	0.37 inches	0.52 inches	1965-1966
Carrizozo	0.45 inches	1.05 inches	1955-1956
Cloudcroft	2.09 inches	3.73 inches	1999-2000
El Rito	1.19 inches	1.26 inches	1970-1971
Fort Sumner	0.23 inches	0.34 inches	1954-1955
Gascon	0.99 inches	1.29 inches	1955-1956
Gran Quivira	0.17 inches	0.82 inches	1949-1950
Las Vegas	0.12 inches	0.48 inches	1966-1967
Los Alamos	0.88 inches	1.68 inches	1970-1971
Quemado	0.51 inches	0.67 inches	1958-1959
Roswell	0.18 inches	0.27 inches	1966-1967
Ruidoso	1.37 inches	2.50 inches	1983-1984
Santa Fe	0.63 inches	0.81 inches	1903-1904
Santa Rosa	0.22 inches	0.49 inches	1949-1950
Socorro	0.03 inches	0.27 inches	1973-1974
Taos	1.04 inches	1.54 inches	1976-1977
Truth or Consequences	0.08 inches	0.39 inches	1954-1955

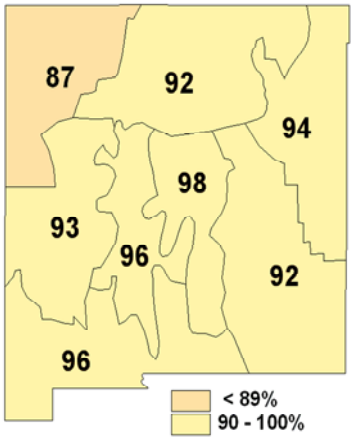
Drought, La Niña, and NM Precipitation (Cont.)

Prospects for improvement of drought conditions in the near future are not good. The graphs below show the average spring and summer seasonal precipitation (as a percentage of normal) for each of the eight climate divisions for the past 16 La Niña episodes.

Spring (March - May) Precipitation during La Niña Events (% Normal)

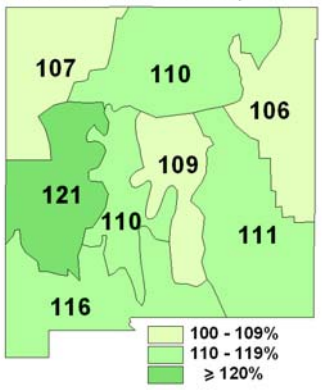


Summer (June - August) Precipitation During La Niña Events (% Normal)



Another consideration worth looking at this time of year is the mountain snow pack. Some studies (e.g. Gutzler, University of New Mexico) suggest the lack of a snow pack in the spring may lead to a more robust monsoon in the southwest. The figure below shows the average summer precipitation (as a percentage of normal) following the worst (lowest) ten snow pack seasons in the past 55 years.

Summer (June - August) Precipitation After Lean Snow Pack Seasons (% Normal)



However, one caveat needs to be mentioned. While the average summer precipitation has been above normal after lean snow pack seasons, the last two of these ten seasons (2000 and 2002) were both summers with below normal summer rainfall. Whether or not this is a significant trend to be followed remains to be seen.

With this in mind, the most likely scenario suggests that precipitation will be below normal through the spring into early summer, with summer precipitation closer to normal. Considering the dismal snow pack and projections for a very unsatisfying spring snowmelt runoff, the drought in New Mexico is not likely to go away anytime soon.

Author: Charlie Liles

'...the drought in New Mexico is not likely to go away any-time soon.'

Did You Know?

Besides the standard public forecasts produced twice daily by the Albuquerque NWS, a site specific aviation forecast called a Terminal Aerodrome Forecast (TAF) is produced four times daily for seven New Mexico airports within Albuquerque's forecast area. In addition, three aviation route forecasts, called Transcribed Weather Broadcasts (TWEBs) are produced for general aviation commutes between Albuquerque and Gallup, Albuquerque and Farmington, and Albuquerque to Las Vegas to Trinidad, CO. For more information, visit http://www.srh.noaa.gov/abq and look for Aviation in the left hand column.

Author: Geoff Bogorad

Altocumulus Standing Lenticular Clouds

You have no doubt seen them in the sky, perhaps snapped a photo or two and used terms like "flying saucer" or "stack of pancakes" to describe them. So what exactly are those mysterious looking clouds and why do they form?

January 18, 2006: Photos of ACSL clouds in the vicinity of Albuquerque
Photos courtesy of Donna Houghton

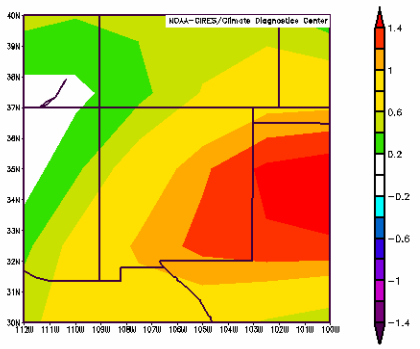
Known as Altocumulus Standing Lenticular (ACSL) or Altocumulus Standing Lenticularis clouds, they are associated with waves in the atmosphere that develop when relatively stable, fast moving air is forced up and over a topographic barrier that is oriented more or less perpendicular to the direction from which the upper-level wind is blowing. This deflection creates an atmospheric wave downwind of the topographic barrier not unlike a wave you might generate by throwing a pebble into a pond. When sufficient moisture is present above mountaintop level, ACSL clouds develop within the crest of these mountain waves where the air is rising. ACSL clouds are continually developing and dissipating in the vicinity of the wave's crest and immediately downwind of the crest, respectively. That is why they appear to remain stationary (hence their name) even though winds are swiftly (sometimes very swiftly) moving through the entire cloud. They are most often seen in the winter or spring when winds aloft are typically the strongest.

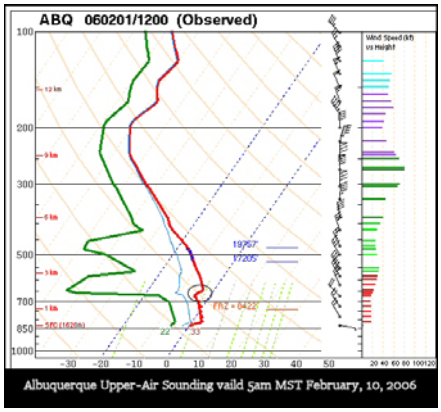
When aircraft encounter a mountain wave, severe turbulence is often the result. The most telling clue that a mountain wave exists is the presence of ACSL clouds. But when the air is too dry to support cloud development, pilots and others may be unaware that a mountain wave and potentially severe turbulence exists. So while visually striking and appealing to photographers, ACSL may not be a welcome sight to those in the aviation community. Additionally, strong and gusty surface winds may be encountered particularly in the lee of the mountain barrier.

April 2005: ACSL clouds over the San Francisco Mountains near Glenwood.

Dominated by periods of strong, mostly dry northwest winds aloft, the upper-air pattern during the winter of 2005-06 was down right dismal for precipitation across New Mexico. It favored, among all things, mountain wave development and increased windiness.

The image below depicts the departure from normal of wind speed (m/s) at roughly the 10,000 MSL level between December 1, 2005 and February 28, 2006. Note the shades of yellow, orange and red, which indicate areas where free-air wind speeds were above average.





The image above depicts the Albuquerque upper-air sounding valid at 5am MST February 1, 2006. Note the inversion, or shallow layer of stable air at ~2km MSL just above the level of New Mexico's high terrain. Northwest winds of 30-40 knots were also present through a deep layer of the lower atmosphere. This sounding was taken the day (within a couple hours) that an impressive ACSL cloud was captured on film just north of Gallup (photo below) and is typical of days when ACSL clouds are present.

Author: Kerry Jones

Meet Your Observers

A tour by Joe Alfieri of the NWS observing equipment.

Within each issue of your New Mexico Skywatcher, the National Weather Service in Albuquerque will highlight cooperative observers from across our forecast area (which includes the northern two – thirds of New Mexico). This section was designed to allow observers across the state to meet fellow hard-working volunteers within the region. We are proud of the service you provide our nation, and we want to acknowledge your hard work. If you would like to nominate someone for this section, let us know.

Authors: Joe Alfieri/Maxine Pacheco/Daniel Porter

East Central New Mexico

Grady Bright

The highly accurate and reliable data recorded by Mr. Bright for Melrose, N.M., for the past 49 years and the vast agricultural area which it serves has helped establish the climatic and hydrological boundaries of this region. The Melrose weather station was established July 1, 1908. Records show that between June 1954 and October 1957, the station changed hands four times. It was October 3, 1957 when Grady Bright took over the weather station from John A. Hughes. Grady Bright was manager of Melrose Grain for 38 years. "I was always interested in agriculture, and of course, the weather plays a very large part in the success or failure of agriculture," he said. A native of West Camp, Texas, Grady spent his life in Roosevelt or Curry counties. He was Mayor of Melrose for 8 years, president of the Melrose Chamber of Commerce, and secretary of the Lions club. He was president and board member of the New Mexico Feed Dealers Association. He helped start Eastern New Mexico Natural Gas and is a past president and board member of the utility company. Grady Bright's weather observation area includes the Ogallala Aquifer, which has a vital impact on agriculture. This area has both dry-land and irrigation farmers who make use of the data Grady provides to the National Weather Service. Grady's observations have been used by the trucking industry and tourists as they travel through the area. His observations have also been beneficial to the operation of the bombing range maintained by the Cannon Air Force Base near Melrose.

Northern New Mexico

Robert Prunty

The Red River weather station has been in the Prunty family for over 74 years. In 1921, the Prunty family moved from Colorado to Red River. In 1932, George Prunty took over measuring Red River's fluctuating weather from Ed Westoby. This is when Robert Prunty, George's brother, began his on-the-job training. During World War II, Ethel Prunty, George and Robert's mother, monitored the station while they were in the service. Robert eventually took over the station from his mother in 1956. Since then, he has posted daily weather conditions on a black board, in front of his two-story log home on the main street in Red River, N.M. He also sends daily reports to the NWS via telephone and IV-ROCS. The highly accurate and reliable weather records taken by the Prunty family have been a major factor in determining the climatic boundaries of this sparsely populated, but very strategic mountain region. Mr. Prunty was responsible for snow storage observations and maintenance at Midnight Mine, N.M. for 12 years, until its closure in 1976. On many occasions Robert has aided the NWS with his intimate knowledge of local weather conditions and their effects in this rugged mountain region. During wet or snowy years, he has kept close contact with the NWS ABQ Service Hydrologist concerning winter snow pack and its water runoff into the upper Rio Grande during spring. Mr. Prunty has been postmaster and president of the Chamber of Commerce in Red River. He is a long-time local leader of his community and surrounding region. Prunty said in his years of watching Red River's weather, the hottest temperature he's recorded was 94 degrees in the late 1930s, and the coldest was negative 51 degrees in the late 1940s. Mr. Prunty was awarded the John Campanius Holm Award in 1979, and the Thomas Jefferson Award in 1989, which is the highest award given to weather observers by the National Weather Service.

Staying 'Grounded'

With all the modernization in equipment and methodology that has benefited National Weather Service operations over the past 20 years, there is a perception in some folks' minds that meteorologists can accurately tell what is occurring weather-wise in real time at any particular spot. But "ground truth" is the lifeblood of our short-term severe weather warning and forecasting operations at the Albuquerque National Weather Service office. "Ground truth" involves someone observing the weather event of interest (most often severe thunderstorms, tornadoes, flash flooding or life-threatening winter weather), and accurately reporting it back to our office. This process gives us the reality of actual conditions at ground level where the weather is a potential threat to life or property, and it allows us to determine how accurately weather radar and satellite pictures are depicting the actual weather affecting the observer. We are in contact with a network of severe weather spotters during severe weather outbreaks. However, hearing from you, our cooperative observers, would greatly help fill gaps in our spotter network and, most importantly, significantly contribute to the timeliness and accuracy of our severe weather warnings and statements. This improvement to our warnings will make your family, your neighbor's family, and anyone else in the area, safer during active weather.

The National Weather Service is interested in receiving reports of tornadoes or funnel clouds, hail (any size) and strong winds (measured or strong enough to create damage), flash flooding, and even life-threatening winter weather conditions. We have a toll-free number to use when reporting severe weather, 1-888-386-7637. Please help us improve our ability to accurately and quickly warn you and your neighbors by calling us when you observe severe weather.

Author: Mark Fettig

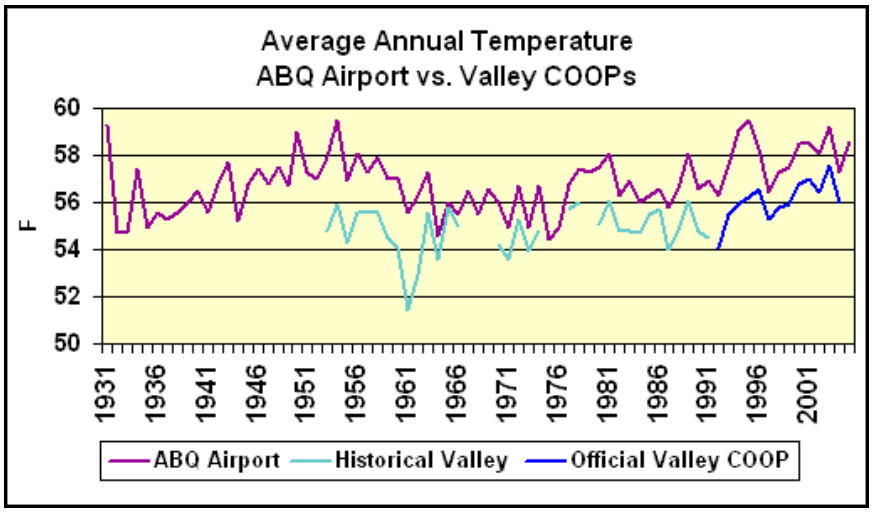
Photos Courtesy of Pete Sanchez, Jane Love, and Oscar Cole, Jr. respectively

Historical Albuquerque Valley Data (Cont.)

(from Page 1) who still maintains the site. All three sites were located at a similar elevation (~ 4,960 feet) and within a few miles of each other on the west side of the Rio Grande. The Albuquerque Valley station became an official cooperative weather station in 1991. Recently, personnel at the NWS Albuquerque Forecast Office gathered the unpublished climate records from these COOP sites and entered the records into our climate database. Thanks to these observers, we now have longer records and a better understanding of the past climate and weather conditions within the Albuquerque Valley. The data will be used for research and climate studies, mainly addressing variations across the Albuquerque metro area.

Author: Jeff Michalski

Historical Albuquerque Valley Extremes:	
Maximum Temp	106°F (June 28, 1980)
Minimum Temp	-22°F (January 7, 1971)
Precipitation	2.10" (June 26, 1988)
Snowfall	12.0" (February 8, 1986)



By The Numbers

Luna, NM
March 12, 2006
Photo Courtesy of
David Thornburg

Dry, drier and driest can best summarize the winter season across New Mexico. The period from November 2005 through March 2006 was exceptionally dry, but we don't have to tell any of you that! The fall held much promise with above normal precipitation in September and October for most areas. But a reversal was seen from November through February, followed by some limited improvement in March, as rainfall and snowfall was closer to normal. The four largest snowfall and precipitation totals for the fall and winter seasons combined are shown in the tables to the right. By contrast, during the 2004-2005 winter season, Red River (which was also highest in snowfall) received 242.1 inches of snow, over twice as much as this past winter!

Temperatures were generally above normal during the winter season, especially in January, as well as November. December, February and March were all close to, or a little above normal. However, several blasts of cold air were able to make it south into New Mexico, with the coldest outbreak in early December. The coldest temperatures across most of the state occurred on December 8th and 9th, as shown in the middle table below.

Author: Chuck Jones

Location	Snowfall (Oct-Mar)	Co-op Observer
Red River	116.5 inches	Robert Prunty
Angel Fire	87.0 inches	Lisa Sanchez
Brazos Lodge	59.5 inches	Michael Hays (USFS)
Lake Maloya	48.8 inches	Bob McIvor

Location	Coldest Temp	Co-op Observer
Eagle Nest	-22 (Dec 8 and 9)	Ernest Sutliff
Maxwell	-19 (Dec 8 and 9)	Kay Potner
Cimarron	-17 (Dec 8)	Maralyn Vargas

Location	Precip (Sep-Mar)	Co-op Observer
Red River	11.37 inches	Robert Prunty
Angel Fire	9.65 inches	Lisa Sanchez
Dulce	8.05 inches	Carl Romnes (BIA)
Gascon	7.63 inches	Editha Bartley

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Albuquerque,
New Mexico

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Working Together to Save Lives.

How would you like to receive future issues?

The New Mexico Skywatcher will be available on your NWS website at http://www.srh.noaa.gov/abq. If you do not have access to the internet or would simply like a copy in the mail, return this portion to the NWS at the address on the left. We can notify you when the newest version of the newsletter is updated on the NWS website via email. If you would like to be notified via email, submit your request to **sr-abq.webmaster@noaa.gov** (make sure to state your name and email address).